Smart-AVI
SMART AUDIO VIDEO INNOVATION

Installation Manual

DVN-16P

16-Port Cross-platform DVI-D Switch
with Stereo Audio and USB 2.0

Control 16 Computers, PC or Mac on one Display
Up To 20 Feet Away with Stereo Audio and USB 2.0

Introduction

The DVN-16P is a cross-platform switch capable of sharing a DVI-D monitor, stereo speakers and USB 2.0 devices between sixteen computers. It is RS-232 and Infrared compliant, capable of being controlled remotely via software (TCP/IP), locally via the front panel, RS-232 or Infrared remote control.

Features

- Supports Mac, PC, Linux and Sun DVI
- Supports High Resolution1920x1200 60Hz WUXGA
- Uses universal DVI Single Link connectors
- Zero pixel loss with TMDS signal correction
- Supports all USB 2.0 Devices (Flash Drives, Printers, Scanners, etc.)
- Supports USB 2.0 keyboard and mouse
- Balanced stereo audio output
- Front panel tactile switch with LCD display
- Full IR and RS-232 control
- Optional TCP/IP control

Applications

- Server Collocation
- Digital Signage
- Airports
- Dealer Rooms
- Control Rooms
- Audio/Visual Presentations
- Hotels/Resorts
- KVM Switches

The DVN-16P has a broad range of applications, but its main function is to centralize the access to several computers into one console. Not only does it function like a KVM, it has USB support. This allows a user at the console to use USB devices that would otherwise be unavailable with conventional KVMs. For example, it allows a user to use a flash memory drive without having to plug it directly into the remote computer. In the medical or industrial field for example, where it may not be practical (or safe) to have one or more CPUs in the general vicinity, the DVN-16P is the perfect solution.

NOTE: THE USB OPERATION OF THE DVN-16P IS FULLY TRANSPARENT.
TO ATTACH ADDITIONAL USB DEVICES A USB HUB MAY BE USED.

What's in the Box?

PART NO.	QTY	DESCRIPTION
DVN-16PS	1	DVNET-16P, 16X1 DVI-D, USB2.0, Audio switch
Power Supply	1	PS5VDC4A
User Manual	1	

Technical Specifications

VIDEO	
Format	DVI-D Single Line
Maximum Pixel Clock	165 MHz
Input Interface	(16) DVI-D 29-pin female
Output Interface	(1) DVI-D 29-pin female
Resolution	Up to 1920 x 1200 @60Hz
DDC	5 volts p-p(TTL)
Input Equalization	Automatic
Input Cable Length	Up to 20 ft.
Output Cable Length	Up to 20 ft.
AUDIO	
Frequency Response	20 Hz to 20 KHz
Impedance	600 ohm
Nominal Level	0-1.0 V
Common Mode	Rejection at 60dB
Input Interface	(16) 3.5 mm Stereo Audio
Output Interface	(1) 3.5 mm Stereo Audio
USB	
Signaling	USB 2.0, 1.1 and 1.0 w/ Internal Hub
Input Interface	(16) USB Type B
Output Interface	(2) USB Type A
CONTROL	
Front Panel	Tact Switch
RS232	Via Software @ 9600 bps
IR	Via Remote Control with IR-EYE Type 3
OTHER	
Power	External 100-240 VAC/5VDC4A @20W
Dimensions	10.5"W x 1.875"H x 6"D
Weight	8 lbs.
Approvals	UL, CE, ROHS Compliant
Operating Temp.	32-131°F (0-55 °C)
Storage Temp.	-4-185 °F (-20-85 °C)
Humidity	Up to 95%
Emulation	NO KEYBOARD OR MOUSE EMULATION

Product - Installation Diagram

Installation

1. Turn off all computers, speakers and the display.
2. Connect the DVI extension cables, USB cables, and audio cables (not included) to the computers and to the "IN" ports on the DVN-16P.
3. Connect the display to the "OUT" DVI connector on the DVN-16P.
4. Connect USB devices, including mouse and keyboard, to the "OUT" USB connector on the DVN-16P.
5. Connect speakers to the "OUT" audio connector on the DVN-16P.
6. Connect the power supply to the DVN-16P.
7. Power on the computers, speakers and the display.
8. Use the front panel buttons, an RS-232 connection or infrared remote control to select the desired input port.

Switching Between Ports

There are three ways to switch between inputs on the DVN-16P: via the front panel buttons, IR remote control, RS-232 connection or TCP/IP (Internet).

Front Panel Control

To switch ports using the front panel, press either the Enter button for up or the Scroll button for down to select the port you would like to switch to. The selected port number will be indicated on the LED display. To use the front panel to program the DDC table, see "DDC Learning".

IR Control (optional)

To switch ports using an infrared remote control (optional accessory), connect an SM-EYE (optional accessory) to the DVN-16P box and the unit will auto-detect the infrared connection. Once the connection is made, you may use the IR remote to cycle through the available ports.

When using the SRC-2A infrared remote control:

- *To switch to a specific port, use the keypad to enter the two-digit number of the desired port and press the ENTER button.*
- *To cycle through the available ports, press the CH up/down buttons.*

RS-232 Control

To switch ports using an RS-232 connection, use a male-to-female serial cable to connect a computer to the DVN-16P's RS-232 port. Use Hyperterminal to connect to the DVN-16P, making sure to use the standard communication mode of 9600bps, 8, N, 1.
(NOTE: all commands must be uppercase)

- To switch ports, use the standard "//M" command prompt.
- To switch to the "IN 1" port, send "//M01 [ENTER]"
- To switch to the "IN 2" port, send "//M02 [ENTER]" etc.

- To switch to the "IN 1" port and toggle the hotplug pin, send "//H01 [ENTER]"
- To switch to the "IN 2" port and toggle the hotplug pin, send "//H02 [ENTER]" etc.
  (the hotplug pin is used to wake the display from standby)

- To reboot the DVN-16P, send "//BOOT [ENTER]"
- To display the current firmware version number, send "//XXXX [ENTER]"
- To reset the DVN-16P to factory defaults, send "//RESET [ENTER]"
  (the DVN-16P must be power cycled to complete the reset command)

TCP/IP Control (optional)

To control the DVN-16P remotely via the internet, connect an SMTCP controller (optional accessory) to the RS-232 port of the DVN-16P. For more information about the SMTCP controller, please visit our website at www.smartavi.com.

DDC Learning

The DVN-16P is fully capable of "learning" and remembering what type of display monitor is connected to the unit. Programming the DDC (Display Data Channel) is accomplished using the two buttons located on the front panel.

To enter Learning Mode, simply press both the Scroll and Enter buttons at the same time until the display reads **"Menu"**. By then pressing the Scroll button, you may cycle through the following DDC learning modes: (to select a mode, press the Enter button)

"Learn PC" indicates Personal Computer Mode and automatically selects the standard display characteristics of a PC display, which typically works for any PC/Display combination.

"Learn Mac" indicates Mac Mode and selects the best display mode to accommodate a Mac.

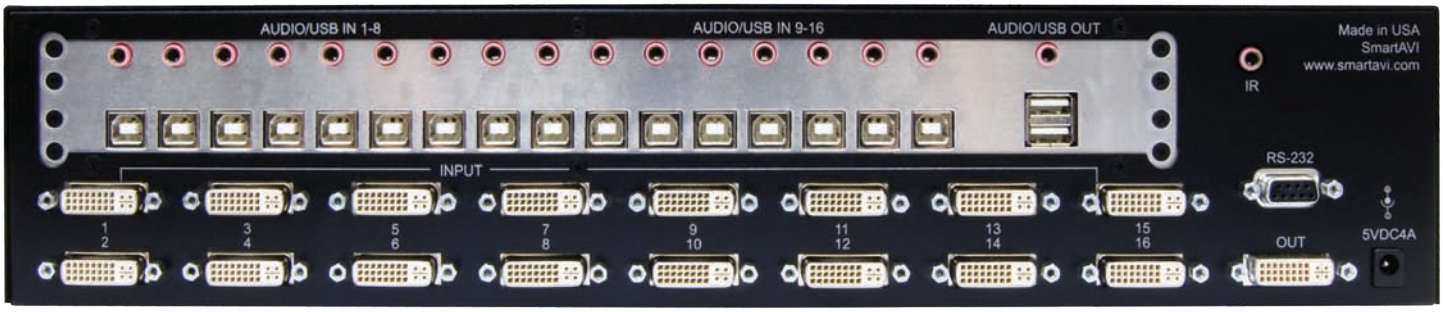
"Learn Screen" indicates Screen Mode, which learns the type of display connected to the "OUT" port.

"Exit" allows the user to exit the menu.

ABOUT DDC

DDC provides plug-and-play capability to your displays. When you plug a display into your computer, the DDC table in the display tells the computer the optimal resolution to use. In order to preserve this plug-and-play capability, we have integrated DDC learning into all of our DVI Solutions.

DVN-16P Front



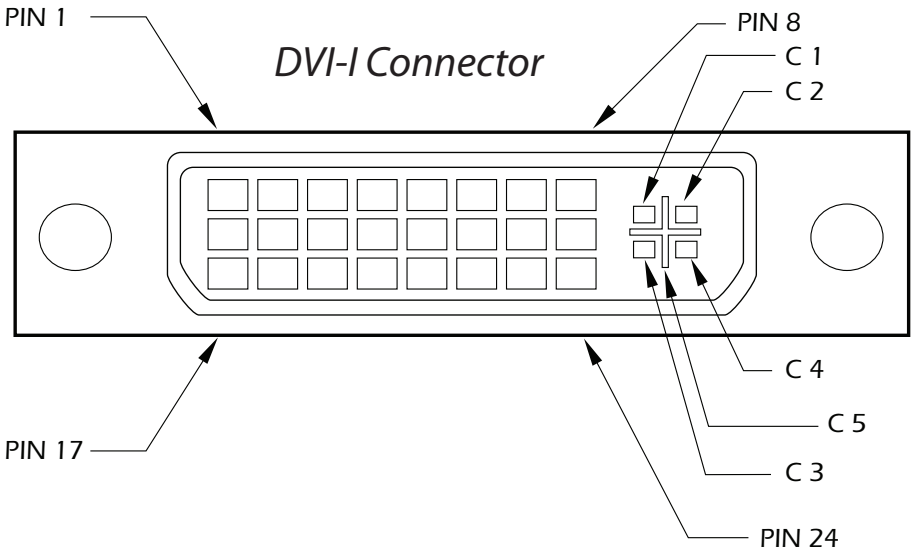
DVN-16P Rear

Supported Resolutions (built in DDC table)

Resolution	Refresh Rate
640 x 480	85 Hz
800 x 600	85 Hz
1024 x 768	85 Hz
1152 x 870	75 Hz
1280 x 768	75 Hz
1280 x 960	60 Hz
1280 x 1024	60 Hz
1600 x 1200	60 Hz
1920 x 1200	60 Hz

NOTE: The DVN-16 is capable of DDC learning and is not limited to the above resolutions. *(See DDC learning on page 5)*

DVI-D Configuration



Pin #	Signal	Pin #	Signal
1	T.M.D.S Data 2-	16	Hot Plug Detect
2	T.M.D.S Data 2+	17	T.M.D.S Data 0-
3	T.M.D.S Data 2/4 Shield	18	T.M.D.S Data 0+
4	T.M.D.S Data 4-	19	T.M.D.S Data 0/5 Shield
5	T.M.D.S Data 4+	20	T.M.D.S Data 5-
6	DDC Clock	21	T.M.D.S Data 5+
7	DDC Data	22	T.M.D.S Clock Shield
8	Analog Vert. Sync	23	T.M.D.S Clock+
9	T.M.D.S Data 1-	24	T.M.D.S Clock -
10	T.M.D.S Data 1+		
11	T.M.D.S Data 1/3 Shield	C1	Analog Red
12	T.M.D.S Data 3-	C2	Analog Green
13	T.M.D.S Data 3+	C3	Analog Blue
14	5VDC 1.6A	C4	Analog Horz Sync
15	GND	C5	Analog Ground

NOTE: The DVN-16 uses a DVI-I connector, but supports DVI-D.

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